News Release

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For immediate release

Optimization server reaches two million milestone

ARGONNE, Ill. (Feb. 17, 2010) — NEOS, the Network-Enabled Optimization System developed by researchers at the U.S. Department of Energy's (DOE) Argonne National Laboratory in conjunction with Northwestern University, has reached a new milestone: two million submissions to its optimization software.

NEOS has been used extensively for a variety of applications, including modeling electricity markets, predicting global protein folding and training artificial neural networks.

Optimization technology is essential to engineers, scientists, businesses and students. But solving optimization problems can be tedious and time-consuming. Key to the success of NEOS is its removal of obstacles that prevent the rapid solution of complex optimization problems.

Using flexible combinations of World Wide Web tools, remote procedure calls and email, researchers can access the NEOS server and have their optimization problems solved automatically, without installing software, downloading and linking code, or writing driver subroutines. Users of NEOS can obtain a solution in a matter of hours instead of days.

"Because of its ease of use and generality, NEOS has gained tremendous popularity," said Jorge Moré, an Argonne Distinguished Fellow who has guided the development of NEOS since its inception a decade ago. In 1999, there were fewer than 18,000 submissions to NEOS. Today NEOS is the premier source of optimization technology on the Web for users of optimization software, with over 235,00 submissions in 2009.

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Using the NEOS server is easy. The user selects a program, or "solver," for a particular type of optimization problem. In order to help with the choice, an "optimization tree" provides suggestions, and each solver comes with sample problems and background information. Once the user has selected the solver, NEOS compiles all subroutines, links with the appropriate libraries, and carries out the necessary computations. The user is then sent the solution, along with various runtime statistics.

The two million milestone also reflects the growing use of the NEOS server by students and faculty in both undergraduate and graduate classes.

"By providing free access to the most recent and best optimization software, NEOS enables students to experiment with a broad variety of solvers and to attack problems substantially larger than typical classroom examples," said Todd Munson, an Argonne computer scientist who has been an architect of NEOS. "This use provides a strong and lasting foundation for future optimization research."

The NEOS team, consisting of Moré, Munson, Liz Dolan (a graduate student working at Argonne), and Bob Fourer (their colleague at Northwestern), won the prestigious Beale-Orchard-Hays Prize in 2003 for excellence in computational optimization. In presenting this prize, which is awarded only once every three years, the Mathematical Programming Society noted: "The NEOS Server has had a tremendous impact in the field of optimization. The influence of NEOS is such that in many applied fields the NEOS Server is synonymous with optimization."

The NEOS Server is operated with support from DOE. For more information about NEOS, please visit the web site: www-neos.mcs.anl.gov.

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